Technical Memorandum
Comments on Appendix A of the Final Screening Level Ecological Risk Assessment
Gulfco Marine Maintenance Superfund Site
Freeport, Texas
March 10, 2010

Remedial Action Contract 2 Full Service
Contract: EP-W-06-004
Task Order: 0006-RSBD-06JZ

Prepared for

U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Prepared by

EA Engineering, Science, and Technology, Inc.
405 S. Highway 121
Building C, Suite 100
Lewisville, Texas 75067
(972) 315-3922

April 2010
Revision: 00
EA Project No. 14342.06

1.0 INTRODUCTION

This Technical Memorandum summarizes EA Engineering, Science, and Technology, Inc.'s technical review comments for Appendix A of the Final Screening Level Ecological Risk Assessment (SLERA) prepared by Pastor, Behling & Wheeler, LLC (PBW) for the Gulfco Marine Maintenance Superfund Site (site), located in Freeport, Texas, and submitted to the U.S. Environmental Protection Agency (EPA) on 10 March 2010. The technical review was conducted to evaluate ProUCL data output provided in Appendix A of the SLERA to assure that this data was accurately generated, complies with guidance, and appropriate conclusions were reached.

Technical review comments pertaining to the evaluation of the ProUCL data are provided in Section 2.0. Section 3.0 provides a summary based on the outcome of the technical review.

2.0 TECHNICAL REVIEW COMMENTS

The evaluation indicates the ProUCL model was not run correctly, and the output results likely resulted in erroneous Upper Confidence Limits of the Means (UCLMs). Specifically, the ProUCL model was run with the assumption that data had nonparametric or normal statistical distributions, but ignored the consideration of other distributions (e.g., lognormal or gamma). Although the model output directed the user to examine other distributions, these were not assessed, and conservative assumptions were generally assumed. This error can be easily corrected by running the ProUCL software using all available statistical distributions.

As an example, Attachment 1 (taken from Appendix A of the SLERA) illustrates the model output for background barium in surface soil. The model output states " *Data follow Appr. Gamma Distribution (0.05); May want to try Gamma UCLs*". Pastor, Behling & Wheeler ignored this recommendation and used the nonparametric 97.5 % Chebyshev (Mean, Sd) UCLM of 902 mg/kg.

Attachment 2 illustrates the ProUCL Version 4.00.04 run for the same data allowing the examination of all statistical distributions, which duplicates the nonparametric 97.5 % Chebyshev (Mean, Sd) UCL of 902 mg/kg. As noted as part of this output, it states "*Potential UCL to Use: Use 95% Approximate Gamma UCL*" at 501 mg/kg. Based on this comparison, when the appropriate distribution is applied, the UCL should have been 501 mg/kg, and not 902 mg/kg.

It is expected that some of the data in all of the ProUCL model runs are actually nonparametric, in which case the proper UCLM has been chosen. However, it is likely that many of UCLMs based on the ProUCL runs shown in Appendix A may be in error because they are based on the wrong distribution.

3.0 SUMMARY

In summary, all available distribution options should have been included in the ProUCL runs shown in Appendix A, and the assumption of nonparametric or normal statistical distributions is not correct.

The use of nonparametric or normal statistics may result in conservative estimates of the Upper Confidence Limit of the Mean (refer to barium example referred to above). Consequently the SLERA conclusions are conservative. It is not necessary to rerun ProUCL for the SLERA. However, the ProUCL program must be used appropriately to select the proper distribution and UCLMs in the Baseline Ecological Risk Assessment (BERA).
: